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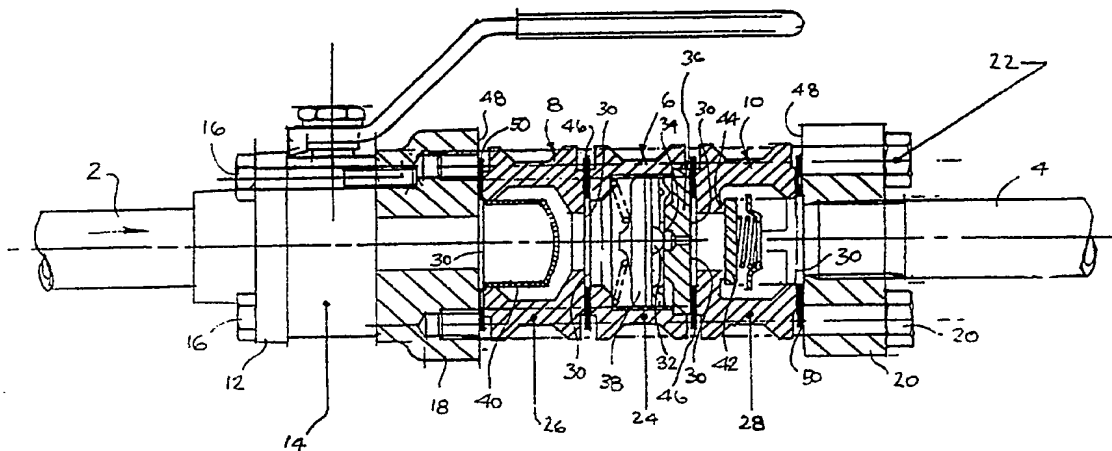
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(56) Documents Cited  
**GB 1188711 A** **US 4350181 A**

(58) Field of Search  
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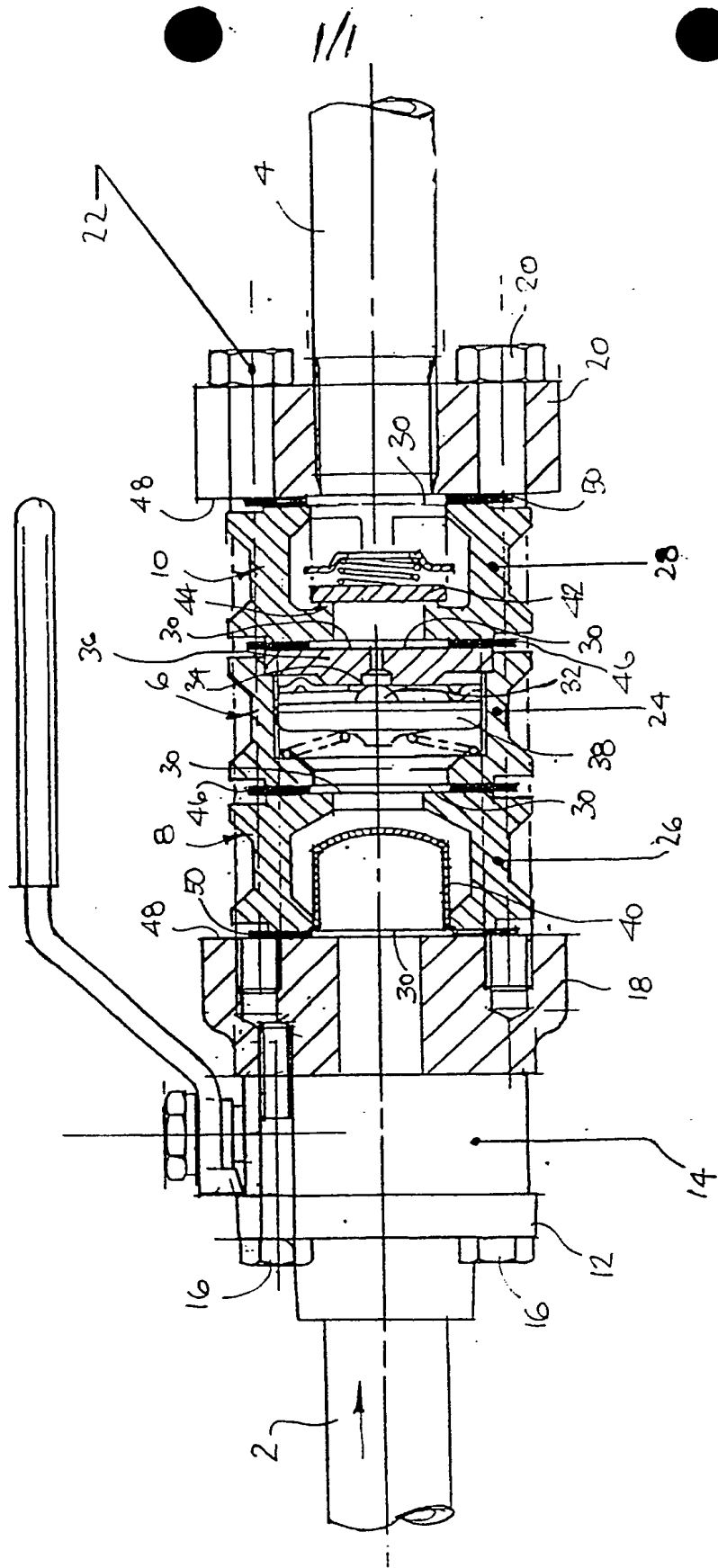
## (54) Condensate trap installations

(57) A condensate trap installation comprises a condensate trap 6 and one or more further components such as a strainer 8 and a check valve 10. The condensate trap 6 and the further components 8, 10 are placed in face-to-face engagement at end faces 30 and clamped together by clamping bolts 22 which apply a compressive force by means of a clamping body 18 and a flange 20 provided respectively on pipe ends 2 and 4. An isolating valve 14 is provided to isolate the condensate trap 6 and the components 8, 10 so that they can be removed.



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CONDENSATE TRAP INSTALLATIONS

This invention relates to condensate trap installations.

Condensate traps are commonly provided in steam  
5 lines for the purpose of discharging condensed water  
from the steam line while minimizing the escape of  
steam.

A steam trap typically comprises a housing which  
accommodates a valve and an actuator for opening and  
10 closing the valve in respect to conditions in the steam  
line. The steam trap housing may also accommodate a  
strainer to prevent dirt from reaching the steam trap  
valve, and a check valve in order to prevent reverse  
flow through the steam trap. The steam trap itself is  
15 fitted in the steam line typically between flanges.  
Isolating valves may also be required in the steam line  
so that the steam trap can be isolated if it is to be  
removed for servicing or replacement.

According to the present invention, there is  
20 provided a condensate trap installation comprising the  
condensate trap and at least one further component,  
condensate trap and the further component each  
comprising a housing having oppositely disposed  
parallel end surfaces, the condensate trap and the  
25 further component being clamped together at adjacent  
end surfaces by clamping means which exerts a  
compressive force at the end surfaces away from the  
adjacent end surfaces.

With such a construction, the clamping means not  
30 only supports the condensate trap and the further  
component with respect to each other, but also secures  
them with respect to the pipeline to which they are  
fitted. Consequently, by releasing the clamping means,  
the steam trap and the further component can be  
35 separated from each other and from the pipeline.

The further component may be a strainer or a check

valve or other components. There may be more than one further component and, in a preferred installation, a further component in the form of a strainer is provided on one side of the steam trap and a further component  
5 in the form of a check valve is provided on the other side.

The clamping means may comprise bolts which clamp the steam trap and the or each further component between two abutment faces which are secured to  
10 respective pipe ends. The peripheries of the steam trap and the or each further component may be shaped to receive the clamping bolts in such a way that rotation of the steam trap and the or each further component is prevented once the clamping bolts are in place.

15 The abutment surface on one pipe end may be fixed with respect to the housing of an isolating valve secured to that pipe end. The abutment face on the other pipe end may be provided on a flange secured to that pipe end.

20 For a better understanding of the present invention, and to show how it may be carried into effect, reference will now be made, by way of example, to the accompanying drawing, which shows a sectional view of a steam trap installation.

25 The installation comprises two pipe ends 2 and 4 between which are provided a steam trap 6, a strainer 8 and a check valve 10.

A flange 12 is secured to the pipe end 2 and an isolating valve 14 in the form of a ball valve is  
30 secured to the flange 12 by bolts 16 which extend through the housing of the valve 14 into an end body 18. A flange 20 is secured to the pipe end 4, and clamping bolts 22 pass through the flange 20 into the clamping body 18. The clamping bolts 22 pass outside  
35 the steam trap 6 and the other components 8, 10, and so form a cage surrounding them. The steam trap 6 and the

other components 8,10 thus lack any provision for securing them together or to the pipeline. The steam trap 6, the strainer 8 and the check valve 10 each comprise a respective housing 24, 26, 28. Each housing 5 has oppositely disposed parallel end faces 30. The housing 24 of the steam trap 6 accommodates a valve comprising a valve element 32 and a valve seat 34 formed in a wall 36 of the housing 24. An actuator 38 supports the valve element 32 for movement into and out 10 of sealing contact with the seat 34.

The housing 26 of the strainer 8 accommodates a strainer element 40, and the housing 28 of the check valve 10 accommodates a spring-loaded check valve element 42 which cooperates with a seat 44.

15 The steam trap 6, the strainer 8 and the check valve 10 are clamped together at their adjacent end faces 30, by the bolts 22. Sealing is provided by gaskets 46. The outer end faces 30 of the strainer 8 and the check valve 10 are engaged by abutment faces 48 20 on the clamping body 18 and the flange 20, through gaskets 50.

As can be appreciated from the Figure, the outer peripheries of the housings 24, 26 and 28 have formations which accommodate the clamping bolts 22 and 25 serve to align the steam trap 6, the strainer 8 and the check valve 10 and prevent their rotation relatively to each other once the clamping bolts 22 are installed.

It will be appreciated that the modular construction of the installation enables the steam trap 30 6 to be combined with one or more further components, such as the strainer 8 and the check valve 10, in order to provide a combination of components appropriate to any particular purpose. Not only may different types of component be selected, but so may components of 35 different characteristics. For example, the check valve 10 may be replaced by one requiring a different

opening pressure. If any one or more of the steam trap and the other components 8 and 10 needs to be removed, for example for inspection, the isolating valve 14 is closed and the clamping bolts 22 are removed. The  
5 installation can then be separated into its components without the need to remove any other fasteners, and only that component requiring attention needs to be dismantled.

CLAIMS

1. A condensate trap installation comprising a condensate trap and at least one further component, the condensate trap and the further component each  
5 comprising a housing having oppositely disposed parallel end faces, the condensate trap and the further component being clamped together at adjacent respective end faces by clamping means which exerts a compressive force at the end surfaces away from the adjacent end  
10 surfaces.
2. A condensate trap installation as claimed in claim 1, in which the further component comprises a strainer and/or a check valve.
3. A condensate trap installation as claimed in  
15 claim 1 or 2, in which the further component is one of a plurality of further components.
4. A condensate trap installation as claimed in any one of the preceding claims, in which the clamping means comprises bolts extending between abutment faces  
20 between which the condensate trap and/or each further component are situated.
5. A condensate trap installation as claimed in claim 4, in which the peripheries of the condensate trap and the or each further component are provided  
25 with formations for receiving the clamping bolts.
6. A condensate trap installation as claimed in claim 4 or 5, in which one of the abutment faces is provided on an isolating valve.
7. A condensate trap installation as claimed in  
30 any one of claims 4 to 6, in which one of the abutment faces is provided on a flange.
8. A condensate trap installation substantially as described herein with reference to, and as shown in, the accompanying drawing.

**Patents Act 1977**

**Examiner's report to the Comptroller under  
Section 17 (The Search Report)**

**Application Number**

GB 9300744.1

**Relevant Technical fields**

(i) UK Cl (Edition L ) F2G (G1 G2A G2Z)

(ii) Int Cl (Edition 5 ) F16L 23/02  
F16T 1/38

**Databases (see over)**

(i) UK Patent Office

(ii)

**Search Examiner**

R J DOWNING

**Date of Search**

16 MARCH 1993

Documents considered relevant following a search in respect of claims 1-8

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1188711 (GACHOT) See page 1 lines 45-76; page 4 line 119 - page 5 line 11; Figures 9 and 10	1, 3, 4, 7
X	US 4350181 (KREELEY) See column 1 lines 48-66 and Figure 1	1-5, 7



Category	Identity of document and relevant passages	Relevant to claim

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**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

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